
Date: September 14, 2015
To: Joseph Ebert, AFCEC COR
CC: Don Gronstal, AFCEC; Calvin Cox, CNGS; and Susan Soloyanis, Sologeo
From: Christopher Terpolilli, CB&I Federal Services, LLC.
Subject: Former George AFB - Fall 2015 Basewide Groundwater Sampling Event

The fall 2015 groundwater monitoring event is scheduled to begin October 12, and will include gauging the depth-to-water for all groundwater monitoring and extraction wells and analyzing groundwater samples from selected wells for volatile organic compounds (VOCs), general chemistry, and total dissolved solids (TDS). The methods and analytical suites for groundwater sampling are provided in the Draft UFP QAPP (Shaw, 2012a). The list of monitoring wells to be sampled is provided as Table 1. Note that a summary of this Tech Memo will also be presented at the upcoming annual Fall BCT Meeting.

The overall objectives of this groundwater monitoring event are to:

- Verify compliance with the ROD (OU1)
- Verify plume stability and product distribution (SS030 and ST067b)
- Verify compliance with the LTMP (OT069)
- Monitor seasonal variation in groundwater elevation and flow patterns, and
- Monitor concentrations and areal extent of contaminants of concern (COCs).

There are four sites associated with this Fall 2015 basewide groundwater monitoring event: OT069, SS030, ST067b, and CG070. Per the BCT workshop in August 2014, AMR sampling was to be divided into two separate events: OU1 sampling (Fall) and non-OU1 sampling (Spring); except where specified within RODs/LTMPs. As OT071 and ZZ051 wells were recently sampled during the Spring 2015 event, they were not included in the Fall sample schedule proposed in this Tech Memo. The proposed well sample list (Table 1) was determined by combining the results of a BCT Workshop (August 26th and 27th, 2014), and the rationale provided in the Groundwater Monitoring Decision Tree (Figure 2-1; Shaw 2013) along with an evaluation of historical results or the requirements of a site-specific long-term monitoring plan (LTMP). Table 1 includes the well identification, aquifer, screen depth, previous depth to water, proposed pump placement, associated site(s), analysis to be performed and rationale for sampling in October 2015. Note that some of the wells are used to monitor multiple plumes and the data

collected will be used for reporting on more than one site. This “cross-over” category must be taken into account when calculating the total well count for the proposed Fall 2015 Sampling Event.

OT069 Site OT069 is a chlorinated VOC groundwater plume present in the Upper Aquifer beneath the flight line area that is part of OU3. The LTMP for Site OT069 entails annual sampling to monitor the chlorinated solvent plume. Table 1 identifies the eight (8) dedicated wells to be sampled under OT069; however, as previously mentioned, there are additional wells which are used to monitor multiple site plumes (i.e. OT069, SS030, and ST067b). There are a total of twelve (12) wells in this category for OT069 (nine [9] wells shared with SS030 and three [3] wells shared with ST067b); also identified in Table 1.

SS030. Site SS030 is a non-CERCLA site that contains a freeproduct and a dissolved-phase petroleum hydrocarbon plume present in the Upper Aquifer beneath the flightline area. Table 1 identifies the five (5) dedicated wells to be sampled under SS030 along with an additional nine (9) wells shared with OT069. Note that as the nine-shared wells were previously accounted for in the OT069 subsection, they do not count toward the well total.

ST067b. Site ST067b is a non-CERCLA site that contains a free product and a dissolved-phase JP-4 plume present in the Upper Aquifer and is located in the southwestern portion of the Base. Monitoring wells associated with the ST067b site will not be sampled for dissolved constituents if free product is observed while gauging the depth-to-water. Table 1 identifies thirty-one (31) dedicated wells to be sampled under ST067b, plus an additional three (3) wells shared with OT069. Note that as the three-shared wells were previously accounted for in the OT069 subsection, they do not count toward the well total.

CG070. Site CG070 consists of a TCE groundwater plume present in the Upper and Lower Aquifers in the northeastern portion of the former George AFB and is part of OU1. Figures 1 and 2 identify the wells that will be sampled for VOCs in October 2015 in the Upper and Lower Aquifers, respectively. Groundwater samples will be collected from a total of 88 CG070 wells. Analysis will include VOCs for all 88 wells and geochemical parameters for select wells (see Table 1).

Fall 2015 Variations. Basewide locations that were sampled in October 2014, but will not be sampled in October 2015, are listed below:

SS030

- | | | |
|---------|---------|----------|
| • MW-13 | • MW-47 | • MW-111 |
| • MW-42 | • MW-99 | • MW-115 |

OT069

- MW-88

These seven (7) non-OU1 wells were recently sampled during the Spring 2015 groundwater event per the BCT Workshop in August 2014. As such, they are now part of the Spring sampling rotation and no longer included in the Fall rotation.

Conclusion. In summary, a total of 144 wells (as shown in Table 1) will be sampled during the upcoming October 2015 basewide groundwater monitoring event. Sample analysis will include 144 VOC samples, 12 cation samples, 12 TDS samples, 90 chloride samples, 49 nitrate samples, 33 sulfate samples, 45 alkalinity samples, 89 field test samples, and zero (0) dieldrin samples (Table 1). All of the wells will be gauged for depth-to-water or depth-to-product. Gauging and groundwater monitoring will be performed in accordance with the Draft UFP-QAPP (Shaw, 2012a). Sampling results from the October 2015 groundwater monitoring event will be reported in the 2015 Basewide Annual Monitoring and Operations Report for CERCLA and Non-CERCLA Sites.

Tables

Table 1 – Monitoring Well Summary, October 2015 Basewide Groundwater Monitoring Event

Figures

Figure 1 – Upper Aquifer Wells to be Sampled, October 2015

Figure 2 – Lower Aquifer Wells to be Sampled, October 2015

References

MWH, 2011, *Final 2010 Basewide Annual Monitoring and Operations Report for CERCLA and Non-CERCLA Sites, George Air Force Base, California*, August.

MWH, 2012, *Final 2011 Basewide Annual Monitoring and Operations Report for CERCLA and Non-CERCLA Sites, George Air Force Base, California*, August.

Shaw, 2013, *Final 2012 Basewide Annual Monitoring and Operations Report for CERCLA and Non-CERCLA Sites, George Air Force Base, California*, May.

Shaw, 2012a, *Draft Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) Quality Program Plan – Volume 1, Former George Air Force Base, Victorville, California*, August.